Du'Bois J. Ferguson
Remediation Manager

Schlumberger Oilfield Service
300 Schlumberger Drive
Sugar Land, TX 77478
Tel: 281-285-3692
DFerguson3@slb.com

January 10, 2011 VIA FedEx Overnight

Section Chief
Environmental Enforcement Section
U.S. Department of Justice
PO Box 7611
Washington, DC 20044-7611

Craig Zeller
Remedial Project Manager
Superfund Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: DOJ Case No. 90-11-2-696/1

Subject: December 2010 Monthly Report
Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site
Natural Resources Trustees Consent Decree

Dear Section Chief:

In accordance with the Consent Decree and Section XIV of the Unilateral Administrative Order for the above referenced site, Schlumberger is required to submit Progress Reports on a quarterly basis. Given the current pace of activities, we will be submitting Progress Reports on a monthly basis until further notice in satisfaction of the reporting requirements of the Consent Decree and Unilateral Administrative Order.

In keeping with Paragraph 20 of the Consent Decree:

> I certify that the information contained in or accompanying this submission is true, accurate and complete. This certification is based on my personal preparation, review, or analysis of the submission, and/or supervision of persons who, acting on my instructions, made the verification that the submitted information is true, accurate and complete.

If you have any questions, please do not hesitate to contact me at (281) 285-3692.

Sincerely,

D. J. Ferguson

DuBois J. Ferguson
Remediation Manager

U.S. EPA REGION IV

SDMS

POOR LEGIBILITY

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V. 2-040506

cc: Honorable G. Ross Anderson, Jr.
G. Ross Anderson, Jr. Federal Building
and United States Courthouse
315 South McDuffie Street, 2nd Floor
Anderson, SC 29624

Honorable William W. Wilkins
Nexsen Pruet
55 E. Camperdown Way
Suite 400
Greenville SC 29601

Leon C. Harmon Esq.
Nexsen Pruet
55 E. Camperdown Way
Suite 400
Greenville SC 29601

John Cresswell
Assistant Director
Division of Site Assessment and Remediation
Bureau of Land &Waste Management
SC Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Regional Solicitor's Office
U.S. Department of the Interior
Attn: Harriet M. Deal
75 Spring Street, SW Room 304
Atlanta, GA 30303

Diane Beeman & Diane Duncan
Ecological Services Office
U.S. Fish and Wildlife Service
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

Paul League
SC Department of Natural Resources
Office of Chief Counsel
1000 Assembly Street
Columbia, SC 29202

Anthony Rabern
Georgia Department of Natural Resources
3695 Highway 197
Clarkesville, GA 30523

Office of the Attorney General
Timothy J. Ritzka
Assistant Attorney General
40 Capitol Square SW
Atlanta, GA 30334

Jamie Sykes
Richard B. Russell Project Office
4144 Russell Dam Drive
Elberton, GA 30635

Frank S. Holleman III
Wyche Burgess Freeman & Parham, P.A.
44 East Camperdown Way
Greenville SC 29601-3591

Mr. Paul Doody
ARCADIS
6723 Towpath Road
Syracuse, NY 13214-0066

Mr. John N. Hanson
Beveridge & Diamond, P.C.
1350 I Street, N.W.
Suite 700
Washington, D.C. 20005-3311

December 2010 Monthly Report
Sangamo Weston/Twelvemile Creek/Lake Hartwell Superfund Site
Operable Unit 2

Activities Initiated/Completed

- Dredge Clare has progressed approximately to the Woodside I Dam in parts of the creek and dredge Kami is located at approximately Station 49+30 (Woodside II Impoundment).
- Downstream of approximately Station 10+00, the dredge Clare continues to the maximum reach of the dredge ladder depth and moves along one side of the creek (north and south) at a time. Once complete, the creek level will be lowered for the dredge to be able to reach the remaining sediment to the extent practicable.
- Submitted Dredge Verification Plan (DVP) survey of STA 5+00 to 10+00 to the Special Receivers for review on December 7, 2010. Met onsite with the dredging consultant, John Adams of Taylor Engineering, to perform a visual review of the dredge section on December 15, 2010.
- Initiated construction of siphons and necessary appurtenances to prepare to lower the water level behind WSI.
- On December 14, 2010, SCDHEC Solid Waste Management Regional personnel were onsite for a general visit/inspection and performed a Class Three Landfill Inspection in accordance with Regulation 61-107.19, Part V. The inspection indicated that the facility was operating properly, and no problems were observed. The completed Inspection Form is provided as Attachment 1.
- Groundwater well sampling was performed by Rogers and Callcott Engineers, Inc. from December 19 through December 22, 2010.

Results of Sampling, Tests, and Other Data

- Sampling and analysis is being conducted relative to the creek turbidity, and water treatment system (WTS) effluent water. Results for the effluent water are attached (Attachment 2) and the continuous turbidity monitoring data is available upon written request.
- Project photographs are included as Attachment 3.

Plans, Reports, and other Deliverables

- Analytical data related to samples collected from the WTS to assess water treatment effluent water were submitted to SCDHEC in the November Monthly Report (submitted December 28, 2010) in Attachment 2.

Work Planned for January 2011

- Receive a confirmation response from the Trustee Council on their proposed modification to the dredge verification protocols. The dredge verification protocol was submitted to the Special Receivers on December 3, 2010 for distribution to the Trustees regarding approval of the DVP for Station 40+00 to 45+00 and future sections covered by DVP's.
- Continue dredge verification surveys with submittal of each 500 foot section to the Special Receivers and their consultant.
- Continue placement of dredged sediment in SMU.
- Complete construction of siphon at WSI and operate the system to lower the water level behind the WSI dam in preparation for dam demolition.
- Continue monitoring WTS to maximize performance and increase production.
- Continue implementation of system process modifications based on an internal process evaluation/optimization study conducted by CH2MHill Constructors, Inc. (CH2MHill).
- Complete dredging in the WSI impoundment.
- Demolition of WSI dam is anticipated to be initiated in January 2011.

Issues Encountered, Anticipated Delays, Solutions

- Extreme weather conditions (e.g., subfreezing temperatures) during the weeks of December 5th and December 12th caused numerous difficulties with site operations, such as ice in the creek, frozen and/or broken components (due to freezing) on the Del Tanks, dredge(s), and water treatment system where winterization was not feasible.
- Significant rainfall (approximately 4 inches) during the first week of December prohibited dredging activities due to high water velocities. Erosion and sedimentation controls were inspected and maintained, as appropriate.
- Last remnant of the island in the Woodside 1 impoundment still had a significant amount of debris and vegetation which presented material handling challenges and some delays to dredging.
- The sluice gate used to release sediments from the Easley Central Dam remains partially open due to mechanical issues and debris blocking closure.

ARCADIS

Attachment 1

D H E C

Class Three Landfill Inspection Form
Regulation 61-107.19, Part V

Facility Name: 12 Mile Creek SMG Date/Time of Inspection: 14 DEC 18

County: Pickens Permit #:

Reason for Inspection: X Routine; ___ Follow-up; ___ Complaint; ___ Other:

Current Weather Conditions: Clear Skies 28°

Previous 24-hours: Rain Y (N) - If yes, amount ___ inches; High winds Y (N)

1 – Meets or exceeds regulatory requirements; 2A – Improvement needed (minor issues exist; corrective measures recommended); 2B – Improvement needed (moderate issues exist; corrective action required and scheduled); 3 – Unacceptable (serious issues and/or recurring issues with minimal or no corrective action taken – alleged regulatory or permit condition violations have occurred – enforcement referral required); Y – Yes: Meets or exceeds regulatory requirements; N – No: Corrective measures recommended that should be fixed by the next inspection or an agreed upon completion date; NA – Not applicable; NI – Not Inspected

Procedures for Excluding Receipt of Unapproved Waste (258.20)

1. N/A Y N NA NI – Overall effectiveness of Special Waste Analysis and Implementation Plan (SWAIP)
2. Y N NA NI – Trained waste screener present
3. Y N NA NI – Random daily load inspections conducted and documented
4. Y N NA NI – Records of unacceptable waste maintained
5. Y N NA NI – Personnel training program on recognition of regulated hazardous waste and PCB waste
6. Y N NA NI – Record of notification to Department within 72-hours of hazardous or PCB waste receipt
7. Y N NA NI – Unauthorized wastes removed from working face by the end of the operating day

Cover Material Requirements (258.21)

8. ___ ≥ 6" soil (short-term cover)
9. NA Alternate Daily Cover (ADC)
10. NA ≥ 6" soil (long-term and/or intermediate cover)
11. Y N NA NI – Adequate soil quantity available for cover

Control of (258.21, 22, 24, 25 and 37):

12. ___ Blowing litter
13. ___ Off-site odors
14. ___ Disease vectors
15. ___ Fires/Open burning
16. ___ Scavenging

Access Requirements (258.25)

17. ___ Condition of access controls
18. ___ Condition of all weather roads – entrance
19. ___ Condition of all weather – internal haul roads

Run-on/Run-off Controls (258.26)

20. ___ Condition of ditches/swales
21. ___ Condition of berms/terraces/downchutes
22. ___ Condition of sedimentation ponds

Leachate Seeps (258.26 and 27)

23. NA Leachate seep management

Liquid Restrictions (258.28)

24. ___ Free of unauthorized bulk or non-containerized liquids

Record Keeping Requirements (258.29)

25. Y N NA (N) – Required records are maintained in the landfill's operating record

Scale Requirements (258.30)

26. Y N NA NI – Scales installed and functioning properly

Required Equipment to Operate Landfill (258.31)

27. (Y) N NA NI – Required equipment operational – if not please provide details in comments as to the type of equipment down for repairs, impact to operations, and status on temporary replacement equipment

Dozer: 1
Excavator: 1
Grader: 1

Certified Landfill Manager/Supervisor (258.32)

28. Y N NA NI – Manager and supervisor certified by SCDHEC
29. Y N NA NI – Certified manager or supervisor on-site

Leachate Collection System (258.33 and 34)

30. Y N NA NI – Leachate handling agreement in place
31. ___ Leachate collection system management

Leachate Recirculation System (258 Subpart I and Permit)

32. ___ Leachate recirculation system management
33. Y N NA NI – Required leachate recirculation reports/data contained in the landfill's operating record
34. ___ Leachate seep management
35. ___ Leachate collection system management

Testing of Municipal Solid Waste (MSW) Incinerator Ash (258.35)

36. Y N NA NI – MSW incinerator ash management

Sign Requirements (258.36)

37. Y N NA NI – Required signs posted

Condition of Monitoring Wells (258.51)

38. ___ Monitoring well maintenance program

Working Face/Elevation (258.37)

39. (Y) N NA NI – Method of elevation control with benchmark (GPS)

Plans and Permit (Permit)

40. Y N NA NI – Operating in accordance with approved plans and general permit
41. Y N NA NI – Permitted engineering drawings available
42. Y N NA NI – Permitted operational plan available
43. Y N NA NI – Permitted stabilization/landscaping plan available
44. Y N NA NI – Permitted contingency plan available
45. Y N NA NI – Permitted approved groundwater monitoring plan available
46. Y N NA NI – Permitted closure plan available
47. Y N NA NI – Permitted post-closure plan available

Name of those present during the Inspection: Stephen Handley / Michael Bare

Comments: Facility appeared to be operating properly upon Inspection

Inspection Item	Corrective action required	Date to be completed
NOTE:	NEW CONTRACTOR HAS BEEN WORKING ON SITE FOR TWO WEEKS	

Additional comment page: Y (N) Photos taken: Y (N)

The signatures below certify that the SCDHEC Inspector has personally checked each item and has answered according to the true condition existing at the time of inspection.

Steve Handley Accadis for Bill Rogers
Facility Representative SCDHEC Inspector

ARCADIS

Attachment 2

ARCADIS
Infrastructure, environment, buildings

ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.0017
www.arcadis-us.com

ENVIRONMENTAL

Mr. Dale Stoudemire, Manager
South Carolina Department of Health and Environmental Control
Bureau of Water/Water Pollution Control Division
Data Management Section
2600 Bull Street
Columbia, South Carolina 29201

Subject:
Schlumberger Technology Corporation, Twelvemile Creek Restoration Project
Pickens County, South Carolina
November 2010 Sampling Results Report

Date:
December 28, 2010

Contact:
Lance S. Ketcham

Phone:
315.671.9163

Email:
Lance.Ketcham@
arcadis-us.com

Our ref:
MT001019

Dear Mr. Stoudemire:

On behalf of Schlumberger Technology Corporation (STC), ARCADIS is providing a summary of sampling results for the Twelvemile Creek Restoration Project in Pickens County for the month of November 2010 in accordance with the October 15, 2009 letter from Butch Swygert of South Carolina Department of Health and Environmental Control (SCDHEC) to Chris Moody of ARCADIS and the August 9, 2010 SCDHEC construction operation approval memorandum, which replaces the March 11, 2010 SCDHEC construction operation approval memorandum. The August 9, 2010 approval memorandum upgrades the onsite water treatment plant to a Group III – Physical/Chemical facility with a maximum discharge of 8.64 million gallons per day (MGD).

Table 1 contains the daily discharge information from the water treatment plant to Twelvemile Creek. This data is recorded onsite and is reviewed by a South Carolina certified water treatment plant operator. The maximum daily discharge for November 2010 was 1.62 MGD on November 30. The average discharge from the water treatment plant for the month of November was 0.27 MGD.

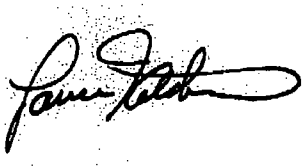
Table 2 contains the results of the analyses described in Table 1 of the October 15, 2009 letter that were performed on the water treatment plant effluent during the month of November 2010. The Laboratory Services Reports from Rogers & Callcott Laboratory Services related to these tests are provided in Attachment A. The samples were analyzed for pH, temperature, total suspended solids and PCBs. The results of these tests were within the ranges outlined in the October 15, 2009 letter.

Table 3 summarizes the results of the whole effluent toxicity (WET) testing; the Laboratory Services Reports for these tests are provided in Attachment B. The WET testing results were within the ranges outlined in the October 15, 2009 letter.

If you have any questions on the above, please feel free to contact me.

Sincerely,

ARCADIS



Lance S. Ketcham
Principal Engineer

Copies:
Melinda Vickers, SCDHEC
Eric Kim, SCDHEC
Du'Bois J. Ferguson, STC
Gary Odom, STC
Paul Doody, ARCADIS

Table 1. Daily Discharge from Water Treatment Plant for November 2010. Twelvemile Creek Restoration Project, Pickens County

Date	Discharge, MGD
Monthly Avg [1]	MR
Daily Max [1]	MR
11/1/2010	0.00
11/2/2010	0.00
11/3/2010	0.00
11/4/2010	0.00
11/5/2010	0.00
11/6/2010	0.00
11/7/2010	0.00
11/8/2010	0.00
11/9/2010	0.00
11/10/2010	0.00
11/11/2010	0.00
11/12/2010	0.00
11/13/2010	0.00
11/14/2010	0.00
11/15/2010	0.00
11/16/2010	1.14
11/17/2010	0.27
11/18/2010	0.00
11/19/2010	0.00
11/20/2010	0.46
11/21/2010	0.00
11/22/2010	1.10
11/23/2010	0.73
11/24/2010	1.44
11/25/2010	0.00
11/26/2010	0.00
11/27/2010	0.00
11/28/2010	0.00
11/29/2010	1.46
11/30/2010	**1.62**
Total	8.21
Days per Month	30
Average	0.27

Notes:

1. Data is from onsite records detailing the daily discharge volumes to Twelvemile Creek; a discharge of 0 MGD is recorded when the treatment plant is not operating or discharging to Twelvemile Creek. Discharge data was recorded by the South Carolina certified wastewater treatement plant operator from Rogers & Callcott.
2. Starting on November 15, 2010, the water treatment plant resumed operation following the maintenance shutdow.
3. The bolded value is the maximum daily discharge recorded.

Superscript Notes:

[1] Discharge reporting guidelines are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

Acronyms and Abbreviations:

Avg - average
Max - maximum
MGD - million gallons per day
MR - monitor and report

Table 2. Effluent Sampling Result for November 2010. Twelvemile Creek Restoration Project, Pickens County

Sample Number	Location	Sample Type	Week	Sample Date and Time	pH	Temp. (°C)	TSS (mg/L)	PCB (µg/L)						
								PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
Monthly Avg. [1]	--	--	--	--	6.0 to 8.5	--	25	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Daily Max. [1]	--	--	--	--	6.0 to 8.5	--	45	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	WTP Effluent Discharge		1		No Discharge									
	WTP Effluent Discharge		2		No Discharge									
AC91053	WTP Effluent Discharge	G	3	11/16/2010 13:30	6.6	14.6	NA	NA	NA	NA	NA	NA	NA	NA
AC91054	WTP Effluent Discharge	C		11/16/2010 13:22	NA	NA	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AC91425	WTP Effluent Discharge	G	4	11/24/2010 08:55	6.8	12.7	NA	NA	NA	NA	NA	NA	NA	NA
AC91426	WTP Effluent Discharge	C		11/24/2010 08:50	NA	NA	14	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AC91580	WTP Effluent Discharge	G	5	11/30/2010 09:38	7.2	10.1	NA	NA	NA	NA	NA	NA	NA	NA
AC91581	WTP Effluent Discharge	C		11/30/2010 09:42	NA	NA	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
				Average	6.9	12.5	8.7	-	-	-	-	-	-	-

Notes:

1. Sampling results complied from Laboratory Services Reports provided by Rogers & Callcot Laboratory Services and submitted in tabular form as required per the10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control [SCDHEC]) to Chris Moody (ARCADIS) and the 3/11/2010 SCDHEC construction and operational approval memorandum.
2. The monthly average includes non-detect readings (indicated by "<") and assumes a value equal to the detection limit. Monthly averages are not calculated for parameters without a detected concentration (indicated by "-").

Superscript Note:

[1] Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (SDHEC) to Chris Moody (ARCADIS)

Acronyms and Abbreviations:

°C - degrees centigrade
G - grab sample
C - 24-hour composite sample
µg/L - micrograms per liter
MGD - million gallons per day
mg/L - milligrams per liter
NA - not analyzed
PCB - polychlorinated biphenyl
Temp. - temperature

Table 3. Whole Effluent Toxicity Result for November 2010. Twelvemile Creek Restoration Project, Pickens County

WET Analysis	Monthly Avg. [1]	Daily Max.[1]	Results
Ceriodaphnia dubia Chronic WET @ CTC=17.4%	25%	40%	0.0%
Ceriodaphnia dubia Chronic WET-Reproduction @ CTC=17.4%	MR, %	MR, %	0.0%
Ceriodaphnia dubia Chronic WET-Survival @ CTC=17.4%	MR, %	MR, %	0.0%
Ceriodaphnia dubia Acute WET @ ATC=35.5%	--	0 [2]	0

Notes:

1. WET testing was performed by ETT.

2. Samples were collected on 11/16, 11/17, and 11/19/2010. One composite sample was collected each day (sample numbers AC90996, AC91042, and AC91217, respectively) to complete the Chronic WET testing. Sample AC90996 was used in the Acute WET testing.

Superscript Notes:

[1] Discharge reporting guidelines and limits are outlined in the 10/15/2009 letter from Butch Swygert (South Carolina Department of Health and Environmental Control) to Chris Moody (ARCADIS).

[2] A results of "0" indicates a passing result.

Acronyms and Abbreviations:

MR - monitor and report

WET - whole effluent toxicity

ARCADIS

Attachments

ARCADIS

Attachment A

Laboratory Services Report:
October 15, 2009 Table 1
Analyses

ROGERS & CALLCOTT
LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 - FAX: (864) 232-6140

AN EMPLOYEE-OWNED COMPANY

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 11/16/2010
Time Received: 14:43
Date Reported: 11/19/2010

South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822

Sample Number	*Sample Description*
AC91053	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/16/2010 at 13:30
AC91054	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/16/2010 at 13:22

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by: _____ ***Results reviewed by:*** _____
authorized signature

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Sample Number	Sample Description, Date and Time Collected
AC91053	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/16/2010 at 13:30

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.6	pH units		0.1	11/16/2010 13:30	LRW	SM 4500HB
Temperature (Field)	14.6	degrees C		0.1	11/16/2010 13:30	LRW	SM 2550B

Sample Number	Sample Description, Date and Time Collected
AC91054	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/16/2010 at 13:22

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Total Suspended Solids	< RDL	mg/l		2.0	11/16/2010 16:08	BSY	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	11/18/2010 17:33	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate	100	%		0	11/18/2010 17:33	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	103	%		0	11/18/2010 17:33	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 608	Completed				11/17/2010 08:30	DBB	EPA 608

ROGERS & CALLCOTT
LABORATORY SERVICES
P.O. Box 5655, Greenville, SC 29606
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

Client Name: SCHLUMBERGER
Address:
Report To:
Telephone No.: FAX No.:
PO No.: Project No.:

Parameter	TSS	PCB
Filtered (Yes/No)	N	N
Cooled (Yes/No)	Y	Y
Container Type (P/G)	P	G
Container Volume	1G	1L
Sample Type (Grab/Composite)	C	C
Sample Source (WW, GW, DW, Other)	WW	WW
Sample Source Chlorinated (Yes/No)	N	N
Lab Receipt Cl_2 Check	NA	neg
Lab Receipt pH Check	NA	neutral
Preserved (Code)	A	A

mcs 11-17-10 / mcs 11/17

Preserved codes: A–None, B–HNO_3, C–H_2SO_4, D–NaOH, E–HCL, F–$Na_2S_2O_3$, G–Boric Acid, H–Ascorbic Acid, I–

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	TSS	PCB	Comments
AC 91054	11/16	1322	WATER TREATMENT PLANT EFF. DISCH.	2	1	1	SAMPLER SET OUT @ 1322 on 11/15/10. TIME proportional By RTC
							AC91053 pH 6.4, Temp 14.6 — GRAB TAKEN + READ @ 1330 on 11/16/10 By RTC

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
① [signature]	11/16/10 1443	② Norma Salley; Shipper Name & #	11/16/10 1443
Relinquished by (Sig.) ③		Received by (Sig.) ④ Shipper Name & #	
Relinquished by (Sig.) ⑤		Received by (Sig.) ⑥ Shipper Name & #	

Seal # at'chd by ○ Recvd. Intact by ○ Seal # at'chd by ○ Recvd. Intact by ○

KNOWN HAZARDS ASSOCIATED WITH SAMPLES

Temperature of blank or representative sample
At time of collection 3.0 °C
At time of lab receipt 3.5 °C

ROGERS & CALLCOTT
LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 - FAX: (864) 232-6140

AN EMPLOYEE-OWNED COMPANY

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 11/24/2010
Time Received: 12:00
Date Reported: 11/30/2010

South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822

Sample Number	*Sample Description*
AC91425	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/24/2010 at 08:55
AC91426	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/24/2010 at 08:50

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by: _____ ***Results reviewed by:*** _____
authorized signature

Carbon copy: Email to Schlumberger TMC Group

Sample Number	Sample Description, Date and Time Collected
AC91425	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/24/2010 at 08:55

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	6.8	pH units		0.1	11/24/2010 08:55	LRW	SM 4500HB
Temperature (Field)	12.7	degrees C		0.1	11/24/2010 08:55	LRW	SM 2550B

Sample Number	Sample Description, Date and Time Collected
AC91426	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/24/2010 at 08:50

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
3 to 5 day turn around	Completed				11/30/2010 00:00		
Total Suspended Solids	14	mg/l		2.0	11/24/2010 12:15	BSY	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	11/29/2010 21:56	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate	97	%		0	11/29/2010 21:56	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	105	%		0	11/29/2010 21:56	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 608	Completed				11/29/2010 08:10	DBB	EPA 608

ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name SCHLUMBERGER

Address

Report To:

Telephone No. FAX No.

PO No. Project No.

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS															
					TSS	PCB														
AC 91426	11/24	0850	WASTE TREATMENT PLANT * EFF. DISCH.	3	2	1	N													

Filtered (Yes/No): N N
Cooled (Yes/No): Y Y
Container Type (P/G): P G
Container Volume: ½G 4L
Sample Type (Grab/Composite): C C
Sample Source (WW, GW, DW, Other): WW WW
Sample Source Chlorinated (Yes/No): N N
Lab Receipt Cl$_2$ Check: NA NA
Lab Receipt pH Check: NA 11.24
Preserved (Code): A A

A–None B–HNO_3 C–H_2SO_4 D–NaOH E–HCl F–$Na_2S_2O_3$ G–Boric Acid H–Ascorbic Acid I– ____

COMMENTS:

SAMPLE SET TO-T @ 0850 ON 11/23/10, TIME MOD. BY RTC
AC 91425
pH 6.8 } GRAB TAKEN +
TEMP 12.7 } READ @ 0855 ON 11/24/10 BY RTC

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
① Kayla Ward	11.24.10 1200	② KR Shipper Name & #	11.24.10 1200
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time
Seal # at'chd by ○ Recvd. Intact by ○		Seal # at'chd by ○ Recvd. Intact by ○	

KNOWN HAZARDS ASSOCIATED WITH SAMPLES
* SUFFICIENT SAMPLE FOR FIELD DUPLICATES

Temperature of blank or representative sample
At time of collection 3.1 °C
At time of lab receipt 3.3 °C

ROGERS & CALLCOTT
LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 - FAX: (864) 232-6140

AN EMPLOYEE-OWNED COMPANY

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Received: 11/30/2010
Time Received: 11:53
Date Reported: 12/02/2010

South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822

Sample Number	*Sample Description*
AC91580	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/30/2010 at 09:38
AC91581	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/30/2010 at 09:42

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by: _____
authorized signature

Results reviewed by: _____

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Sample Number	Sample Description, Date and Time Collected
AC91580	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge grab, collected on 11/30/2010 at 09:38

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
pH (Field)	7.2	pH units		0.1	11/30/2010 09:38	JTH	SM 4500HB
Temperature (Field)	10.1	degrees C		0.1	11/30/2010 09:38	JTH	SM 2550B

Sample Number	Sample Description, Date and Time Collected
AC91581	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/30/2010 at 09:42

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
3 to 5 day turn around	Completed				12/02/2010 00:00		
Total Suspended Solids	10	mg/l		2.0	11/30/2010 12:14	BSY	SM 2540D
Polychlorinated Biphenyls (PCBs)							
PCB-1016	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1221	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1232	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1242	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1248	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1254	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
PCB-1260	< RDL	ug/l		0.5	12/01/2010 22:01	RKH	EPA 608
2,4,5,6-Tetrachloro-m-xylene, (Surrogate	86	%		0	12/01/2010 22:01	RKH	EPA 608
Decachlorobiphenyl, (Surrorate)	94	%		0	12/01/2010 22:01	RKH	EPA 608
Liquid-liquid Extraction Pest/PCB 608	Completed				11/30/2010 14:00	CGW	EPA 608

ROGERS & CALLCOTT LABORATORY SERVICES

P.O. Box 5855, Greenville, SC 29606
Phone (864) 232-1556 Fax (864) 232-6140
Shipping Address: 426 Fairforest Way
Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

Client Name Schlumberger

Address

Report To:

Telephone No. ____ FAX No. ____

PO No. ____ Project No. ____

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS												
Filtered (Yes/No)						N	N										
Cooled (Yes/No)						Y	Y										
Container Type (P/G)						P	G										
Container Volume						½ gal	4L										
Sample Type (Grab/Composite)						C	C										
Sample Source (WW, GW, DW, Other)						WW	WW										
Sample Source Chlorinated (Yes/No)						N	N										
Lab Receipt Cl$_2$ Check						NA	Neg										
Lab Receipt pH Check						NA	7										
Preserved (Code)							A										
AC	91581	11/30	942	Water treatment plant effl Discharge	3		2	TSS	1+N PCB								

A–None B–HNO_3 C–H_2SO_4 D–NaOH E–HCl F–$Na_2S_2O_3$ G–Boric Acid H–Ascorbic Acid I– ____

COMMENTS:

Sampler Set out @ 942 11/30
Time proportional by R&C

AC91580 Grab taken @ 933
pH – 7.2
Temp – 10.1°C
collected by R&C

SAMPLER Relinquished by (Sig.) ①	Date/Time 11/30/10 1153	Received by (Sig.) ② Shipper Name & #	Date/Time 11.30.10 1153	KNOWN HAZARDS ASSOCIATED WITH SAMPLES
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	#sufficient sample taken for field data Duplicates
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	Temperature of blank or representative sample At time of collection 3.0 °C At time of lab receipt 0.0 °C not frozen
Seal #	at'chd by ○ Recvd. Intact by ○	Seal #	at'chd by ○ Recvd. Intact by ○	

Form Revised July 2008

R/C COC FORM

ARCADIS

Attachment B

Laboratory Services Report:
Whole Effluent Toxicity Testing

ROGERS & CALLCOTT
LABORATORY SERVICES

P.O. Box 5655, Greenville, SC 29606
Phone: (864) 232-1556 - FAX: (864) 232-6140

AN EMPLOYEE-OWNED COMPANY

Laboratory Services Report

Client: Schlumberger Technology Corporation
Sangamo - Twelve Mile Creek Project
Attention Gary Odom by email

Date Reported: 12/02/2010

South Carolina Laboratory Identification 23105
North Carolina Laboratory Certificate Number 27
NELAP Laboratory Identification E87822

Sample Number	*Sample Description*
AC90996	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/16/2010 at 13:22
AC91042	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/17/2010 at 13:35
AC91217	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/19/2010 at 08:50

The attached report is for the samples that were received and are referenced above. Rogers and Callcott maintains a formal QA/QC program. Unless otherwise noted, all analyses performed under NELAP certification have complied with all the requirements of the NELAC standard. The analyses met the QA/QC confidence interval for each test method unless otherwise qualified. Estimated uncertainty available upon request.

We appreciate the opportunity to be of service to you. Please contact us at (864) 232-1556 should you have any questions about this report.

Results released by: _____
authorized signature

Results reviewed by: _____

Carbon copy: Email to L Ketcham P Dougher A Kohler S Cary

Case Narrative

AC90996 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/16/2010 at 13:22

Composite sample AC90996 was subcontracted to ETT for Acute and Chronic Toxicity tests.

AC91042 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/17/2010 at 13:35

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

AC91217 Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/19/2010 at 08:50

This sample was an additional composite subcontracted to complete the Chronic Toxicity testing.

Sample Number	Sample Description, Date and Time Collected
AC90996	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/16/2010 at 13:22

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				12/02/2010 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Number	Sample Description, Date and Time Collected
AC91042	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/17/2010 at 13:35

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				12/02/2010 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

Sample Number	Sample Description, Date and Time Collected
AC91217	Schlumberger Technology TMC Water Treatment Plant Effluent Discharge composite, collected on 11/19/2010 at 08:50

Parameter	Result	Unit	Flag	RDL	Date/Time	Analyst	Method
Subcontracted Sample Analysis	Completed				12/02/2010 00:00		

Analysis comment for Subcontracted Sample Analysis: See enclosed subcontract report which includes a total of 10 pages for Acute and Chronic Toxicity from ETT Environmental Inc.

ETT nvironmental, Inc.
P.O. Box 16414, Greenville, SC 29606
(864) 877-6942 • Fax (864) 877-6938
4 Craftsman Court, Greer, SC 29650

Ceriodaphnia dubia Survival and Reproduction Test

EPA-821-R-02-013 Method 1002

Test Species: *Ceriodaphnia dubia*

Client: SCHLUMBERGER
Facility: EFFLUENT
NPDES #: SC

Test Date: 16-Nov-10

Laboratory ID#: T36422

Test Reviewed and Approved By:

Robert W. Kelley, Ph.D.
Laboratory Manager

[redacted] Certification #E87819

SCDHEC Certification #23104

Test results presented in this report conform to all requirements of NELAC, conducted under NELAC Certification Number E87819 Florida Dept. of Health. Included results pertain only to provided samples.

NCDENR Certification # 022

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

DMR Attachment for Chronic Multi-Concentration Whole Effluent Toxicity Test Results Using Linear Interpolation

TWELVE MILE CREEK RESTORATION P Permit number SC Discharge number

FINAL LIMITS 04/01/2010- Parameter Code TCP3B MLOC=1 CTC= 17.40% effluent

		Year	Month	Day		Year	Month	Day
Monitoring period	From	10	11	1	To	10	11	30

Date: 16-Nov-10

Lab ID: 23104

IC25= 88.04%

48 hr Chronic LC50 = > 100.0%

	Mortality Data		Reproduction Data	
Group	# Adults	# Dead	Group Average	Group Variance
0	10	0	23.1	15.43
8	10	0	24.9	4.99
17.4	10	0	24.9	6.10
35	10	0	24.7	3.57
50	10	0	21.8	11.96
100	10	0	17.2	25.51

% Survival Effect at CTC= 0.0%

% Reproduction Effect at CTC= 0.0%

Date: _____

Lab ID: 23104

IC25= _____

48 hr Chronic LC50 = _____

	Mortality Data		Reproduction Data	
Group	# Adults	# Dead	Group Average	Group Variance

% Survival Effect at CTC=

% Reproduction Effect at CTC=

Signature of Principal Executive Officer or Authorized Agent _____

Name/Title of Principal Executive Officer (*typed or printed*) _____

DHEC 3710 (8/05)

PERMITTEE NAME/ADDRESS (*Include Facility Name/Location If Different*)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (*NPDES*)
DISCHARGE MONITORING REPORT (*DMR*)

Form Approved.
OMB No. 2040-0004

NAME TWELVE MILE CREEK RESTORATION PROJECT
ADDRESS PO BOX 447
TIMMONSVILLE, SC 29161

SC	
PERMIT NUMBER	**DISCHARGE NUMBER**

MINOR
FINAL LIMITS
DMR VALID: 04/01/2010-

FACILITY TIMMONSVILLE, TOWN OF
LOCATION TIMMONSVILLE, SC 29161 FROM

	MONITORING PERIOD					
	YEAR	MO	DAY		YEAR	MO	DAY
FROM	10	11	01	TO	10	11	30

NOTE: Read instructions before completing this form.

PARAMETER		QUANTITY OR LOADING			QUANTITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	Sample Type
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
TCP3B LAB ID: 23104 %Effect Statre 7Day Chr Ceriodaphnia MLOC=1	SAMPLE MEASUREMENT	********* *********	********* *********	***** *****	********* *********	0.0	0.0	PER- CENT	0	1/30	GR
	PERMIT REQUIREMENT			***** *****		[illegible] QRTR AVG	REPORT MAXIMUM			1/30	GR
TJP3B LAB ID: 23104 %Mortality 7Day Chr CERIODAPHNIA MLOC=1	SAMPLE MEASUREMENT	********* *********	********* *********	***** *****	********* *********	0.0	0.0	PER- CENT	0	1/30	GR
	PERMIT REQUIREMENT			***** *****		REPORT QRTR AVG	REPORT MAXIMUM			1/30	GR
TVP3B LAB ID: 23104 % Repro Reduc Statre 7d Chr Ceriodaphnia MLOC=1	SAMPLE MEASUREMENT	********* *********	********* *********	***** *****	********* *********	0.0	0.0	PER- CENT	0	1/30	GR
				***** *****		REPORT QRTR AVG	REPORT MAXIMUM			1/30	GR
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

TYPED OR PRINTED

personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE
CODE NUMBER

DATE
YEAR MO DAY

COMMENTS AND EXPLANATIONS OF ANY VIOLATIONS (*Reference all attachments here*)

Chronic toxicity CTC=100% effluent

EPA Form 3320-1 (Rev 3/99) Previous editions may be used.

CHRONIC DEFINITIVE SURVIVAL AND REPRODUCTION/GROWTH TEST
Statistical Analyses

Client: **TWELVE MILE CREEK RESTORATION PROJECT**

Sample Identification: **EFFLUENT**

Test Date: **16-Nov-2010**

Tests for Normality and Heterogeneity of Variance

Parameter	*Test Used*	*Result*
Normality	N/A	N/A
Variance	N/A	N/A

Sample Use

	Sample Date	Sample Used		
Sample A	16-Nov-10	16-Nov-10	17-Nov-10	
Sample B	18-Nov-10	18-Nov-10	19-Nov-10	
Sample C	20-Nov-10	20-Nov-10	21-Nov-10	22-Nov-10

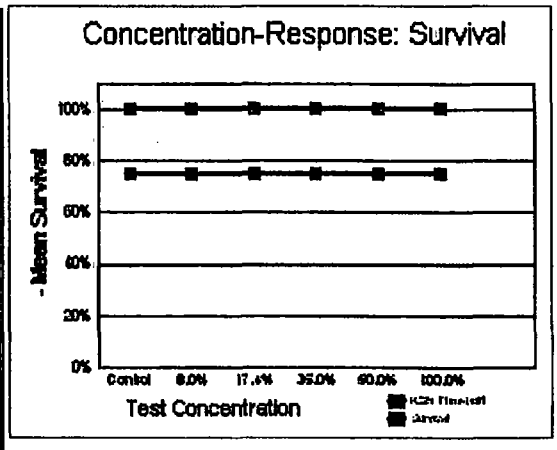
Tests for Differences in Survival and Reproduction

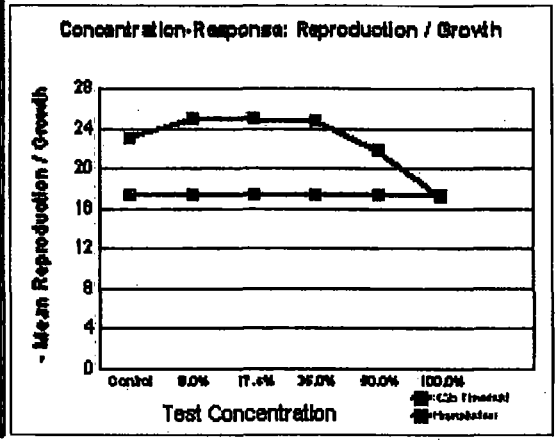
Test Type Used: **Linear Interpolation**

		% Effluent					
Effect	**Control**	8.0%	17.4%	35.0%	50.0%	100.0%	
Survival	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
% reduction		0.0%	0.0%	0.0%	0.0%	0.0%	
Reproduction	23.1	24.9	24.9	24.7	21.8	17.2	
% reduction (smoothed)		0.0%	0.0%	0.0%	10.7%	29.5%	
Variance	15.43	4.99	6.10	3.57	11.96	25.51	

Acceptability Criteria	Value	Upper Limit	Lower Limit
CV:Coeff. of Variation	17.0%	42.0%	8.9%
PMSD: % MSD	13.8%	37.0%	11.0%
MSD:Min. Sign. Diff.	3.2	Acceptability criteria limits not exceeded	

IC25 Point Estimates		TEST RESULTS	
Survival	IC25= > 100.0%	%Reduction per Linear Interpolation	
Reproduction	IC25= 88.0%	@CTC of	17.4%
Hypothesis Testing		Survival effect	0.0%
NOEC (Reprodu	50.0%	Reproduction effect	0.0%
ChV (Reproduct	70.7%		PASS





Comments

source	rep	Test Day 1	2	3	4	5	6	7	8	Total	
Q1 11-4	A			4	0	0	14			18	control
N3 11-4	B			0	3	9	13			25	
X2 11-5	C			3	0	8	13			24	
M3 11-4	D			5	0	8	13			26	
DD8 11-5	E			5	0	8	13			26	
W4 11-5	F			5	0	11	13			29	
U4 11-5	G			2	0	8	11			21	
V6 11-5	H			4	0	9	11			24	
O4 11-4	I			3	0	8	11			22	
BB4 11-5	J			5	0	11	0			16	23.1
8	A			3	0	10	10			23	
	B			0	3	7	13			23	
	C			4	0	9	14			27	
	D			5	0	10	13			28	
	E			5	0	9	14			28	
	F			5	0	7	12			24	
	G			4	0	8	11			23	
	H			4	0	9	12			25	
	I			0	4	8	10			22	Mean
	J			0	4	9	13			26	24.9
17.4	A			6	0	9	13			28	
	B			0	4	10	7			21	
	C			4	0	8	12			24	
	D			5	0	9	14			28	
	E			3	0	8	15			26	
	F			4	0	7	11			22	
	G			3	0	6	14			23	
	H			3	0	8	13			24	
	I			0	5	9	13			27	Mean
	J			0	4	10	12			26	24.9
35	A			5	0	8	13			26	
	B			0	4	9	15			28	
	C			4	0	8	13			25	
	D			0	6	6	11			23	
	E			3	0	7	12			22	
	F			3	0	8	13			24	
	G			3	0	8	12			23	
	H			3	0	9	13			25	
	I			0	4	9	11			24	Mean
	J			0	4	10	13			27	24.7
50	A			0	3	8	13			24	
	B			0	0	9	15			24	
	C			4	0	7	12			23	
	D			0	3	10	11			24	
	E			3	0	6	12			21	
	F			3	0	2	13			18	
	G			4	0	9	14			27	
	H			0	0	6	12			18	
	I			0	2	9	12			23	Mean
	J			0	0	3	13			16	21.8
100	A			0	0	5	12			17	
	B			0	0	10	14			24	
	C			0	0	5	15			20	
	D			0	0	9	15			24	
	E			0	0	4	13			17	
	F			0	0	6	10			16	
	G			0	3	7	9			19	
	H			1	0	8	7			16	
	I			0	0	8	0			8	Mean
	J			0	2	9	0			11	17.2
renew		JC	AE	JS	BB	JS				End Date	
fed		JC	AE	JS	BB	JS				22-Nov-10	
time fed & renew		01:12 PM	03:08 PM	03:11 PM	08:30 AM	01:17 PM				03:45 PM	AE
New temp. °C		24.5	24.7	25.4	24.8	25.3					
Old temp. °C		24.7	25.1	25.1	25.1	25.1	25.6				

D=Dead N/A-Lost or not used

Lab#	T38422
Client	SCHLUMBERGER
Sample ID	EFFLUENT
NPDES#	SC
County	0
Month	11
Start & fed Date	16-Nov-10
Start & fed Time	1550
Started & fed By	JC
Test Organism	Cerodaphnia dubia
Neo. born date	15-Nov-10
Neo. born time	BATCH 2
Test Type	SCCD
Dilution Water	MHSF
Units for Conc.	%
%3rd BROOD	
Test vessels	30 ml
Test volume	15 ml
Incubator #	1
Light	16l/8dk
Initial Temp °C	25
Selenastrum	0.05 ml
YAT	0.05 ml
Test method	EPA 821-R-02-013:1002

Comments

ROGERS & CALLCOTT LABORATORY SERVICES

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Greenville, SC 29607

CHAIN OF CUSTODY RECORD

PAGE 1 - 1

Client Name ROGERS + CALLCOTT

Address

Report To:

Telephone No. FAX No.

PO No. Project No.

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS: Acute + Chronic Toxicity
AC 90996	11/16	1322	WATER TREATMENT PLANT EFFLUENT DISCHARGE*	1	1

Filtered (Yes/No)	N
Cooled (Yes/No)	Y
Container Type (P/G)	P
Container Volume	½G
Sample Type (Grab/Composite)	C
Sample Source (WW, GW, DW, Other)	WW
Sample Source Chlorinated (Yes/No)	N
Lab Receipt Cl_2 Check	
Lab Receipt pH Check	
Preserved (Code)	A

A–None D–NaOH G–Boric Acid
B–HNO_3 E–HCL H–Ascorbic Acid
C–H_2SO_4 F–$Na_2S_2O_3$ I– ____

COMMENTS:

36422A / 36423

SAMPLER SET OUT @ 1322 ON 11/15/10. TIME prop. By R+C

SAMPLER Relinquished by (Sig.) ①	Date/Time 11/16/10 1508	Received by (Sig.) ② Shipper Name & #	Date/Time 11/16/10 1508
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑤ Shipper Name & #	Date/Time
Seal # at'chd by ○	Recvd. Intact by ○	Seal # at'chd by ○	Recvd. Intact by ○

KNOWN HAZARDS ASSOCIATED WITH SAMPLES

* DELIVERED TO ETV 2498

Temperature of blank or representative sample
At time of collection 3.0 °C
At time of lab receipt 1.7 °C

Form Revised July 2008

R/C COC FORM

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CHAIN OF CUSTODY RECORD

PAGE 1 of 1

Client Name: Rogers & Callcott

Address:

Report To:

Telephone No.: FAX No.:

PO No.: Project No.:

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS: CHRONIC TOXICITY	
AC 91042	11/17	1335	WWTP EFFLUENT DISCHARGE *	1	1	

Filtered (Yes/No)	N
Cooled (Yes/No)	Y
Container Type (P/G)	P
Container Volume	2L
Sample Type (Grab/Composite)	C
Sample Source (WW, GW, DW, Other)	WW
Sample Source Chlorinated (Yes/No)	N
Lab Receipt Cl_2 Check	
Lab Receipt pH Check	
Preserved (Code)	A

A–None D–NaOH G–Boric Acid
B–HNO_3 E–HCL H–Ascorbic Acid
C–H_2SO_4 F–$Na_2S_2O_3$ I– ____

COMMENTS:

3642B

Sample set out @ 1335 on 11/16/10 Time proportional By R&C

SAMPLER Relinquished by (Sig.) ①	Date/Time 11/17/10 1502	Received by (Sig.) ② Shipper Name & #	Date/Time 11/17/10 1502	KNOWN HAZARDS ASSOCIATED WITH SAMPLES * DELIVERED TO ETT LAB
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time	
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time	Temperature of blank or representative sample: At time of collection 3.0 °C; At time of lab receipt 2.1 °C
Seal # at'chd by ○ Recvd. intact by ○		Seal # at'chd by ○ Recvd. intact by ○		

Form Revised July 2008

R/C COC FORM

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Greenville, SC 29607

CHAIN OF CUSTODY RECORD

Client Name Rogers + Callcott

Address

Report To:

Telephone No. FAX No.

PO No. Project No.

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS: CHRONIC TOXICITY	Preserved (Code)
AC 91217	11/19	0850	WATER TREATMENT PLANT * EFFLUENT DISCHARGE	1	1	

Filtered (Yes/No): N
Cooled (Yes/No): Y
Container Type (P/G): P
Container Volume: 4L
Sample Type (Grab/Composite): C
Sample Source (WW, GW, DW, Other): WW
Sample Source Chlorinated (Yes/No): N
Lab Receipt Cl2 Check:
Lab Receipt pH Check:
Preserved (Code): A

A-None B-HNO_3 C-H_2SO_4 D-NaOH E-HCL F-$Na_2S_2O_3$ G-Boric Acid H-Ascorbic Acid I- ____

COMMENTS:

36422C

Sampler set out @ 0850 on 11/18/10, Time proportional
By RTC

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
①	11/19/10 1348	② Shipper Name & #	11/19/10 1348
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time

KNOWN HAZARDS ASSOCIATED WITH SAMPLES
* DELIVERED TO ETT LAB

Temperature of blank or representative sample
At time of collection 2.6 °C
At time of lab receipt 2.0 °C

Seal # at'chd by ○ Recvd. Intact by ○ Seal # at'chd by ○ Recvd. Intact by ○

Form Revised July 2008

R/C COC FORM

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

DMR Attachment for Pass/Fail
Whole Effluent Toxicity Test Results

TWELVE MILE CREEK RESTORATION PROJE Permit number SC Discharge number

FINAL LIMITS 04/01/2010- Parameter Code TCP3E MLOC=1 ATC-35.5% effluent

		Year	Month	Day		Year	Month	Day
Monitoring period	From	10	11	01	To	10	11	30

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date 16-Nov-10
Lab ID 23104

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control	20	0				
Test	20	0	Pass			

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date
Lab ID

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date
Lab ID

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date
Lab ID

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date
Lab ID

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Mortality Data - Acute and Chronic Tests   Reproduction Data-Chronic Tests Only

Date
Lab ID

Group	# Adults	# Dead	Pass/Fail	Average	Variance	Pass/Fail
Control						
Test						

Signature of Principal Executive Officer or Authorized Agent ____________________

Name/Title of Principal Executive Officer (*typed or printed*) ____________________

DHEC 3420 (8/05)

Control Survival and Reproduction by Test Day

source	rep	1	2	3	4	5	6	7	8	Total	
DD4 11-5	A		0							0	
O2 11-4	A		0							0	
V3 11-5	A		0							0	
Random	A		0							0	
	A		0							0	
	B		0							0	
	B		0							0	
	B		0							0	
	B		0							0	
	B		0							0	
	C		0							0	
	C		0							0	
	C		0							0	
	C		0							0	
	C		0							0	
	D		0							0	
	D		0							0	
	D		0							0	
	D		0							0	Mean
	D		0							0	0.0

35.6 % Effluent Survival and Reproduction by Test Day

		1	2	3	4	5	6	7	8	Total	
DD4 11-	A		0							0	
O2 11-4	A		0							0	
V3 11-5	A		0							0	
Random	A		0							0	
0	A		0							0	
0	B		0							0	
0	B		0							0	
0	B		0							0	
0	B		0							0	
0	B		0							0	
0	C		0							0	
0	C		0							0	
0	C		0							0	
0	C		0							0	
0	C		0							0	
0	D		0							0	
0	D		0							0	
0	D		0							0	
0	D		0							0	Mean
0	D		0							0	0.0

										18-Nov-10	
										04:26 PM	JC
Old temp. °C			25.6								

D=Dead N/A-Lost or not used

****

11:43 AM

	T36423
	SCHLUMBERGER
	EFFLUENT
	SC
	0
	11
	16-Nov-10
	1615
	JC
	Ceriodaphnia dubia
	40497
	BATCH 2
	SCAPF
	MHSF
	%
	35.5
	30 ml
	15 ml
	1
	16H/8dk
	24:8
	0.05 ml
	0.05 ml
	EPA 821-R-02-013:1002

Comments

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name ROGERS+CALLCOTT

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Rogers & Callcott Lab No.	Yr. 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS: Acute + Chronic Toxicity
AC 90996	11/16	1322	WATER TREATMENT PLANT EFFLUENT DISCHARGE*	1	1

Filtered (Yes/No)	N
Cooled (Yes/No)	Y
Container Type (P/G)	P
Container Volume	½G
Sample Type (Grab/Composite)	C
Sample Source (WW, GW, DW, Other)	WW
Sample Source Chlorinated (Yes/No)	N
Lab Receipt Cl_2 Check	MCA
Lab Receipt pH Check	11-17-10
Preserved (Code)	A

Preserved (Code): A–None, B–HNO_3, C–H_2SO_4, D–NaOH, E–HCL, F–$Na_2S_2O_3$, G–Boric Acid, H–Ascorbic Acid, I– ____

COMMENTS:

SAMPLER Relinquished by (Sig.) ① Ray Ward — Date/Time 11/16/10 | 1508

Received by (Sig.) ② Kay Callcott, Shipper Name & # — Date/Time 11-16-10 | 1508

KNOWN HAZARDS ASSOCIATED WITH SAMPLES
* DELIVERED TO ETT LAB

Relinquished by (Sig.) ③ — Date/Time

Received by (Sig.) ④ Shipper Name & # — Date/Time

Relinquished by (Sig.) ⑤ — Date/Time

Received by (Sig.) ⑥ Shipper Name & # — Date/Time

Temperature of blank or representative sample
At time of collection 3.0 °C
At time of lab receipt 1.7 °C

Seal # ____ at'chd by ○ Recvd. Intact by ○ Seal # ____ at'chd by ○ Recvd. Intact by ○

Form Revised July 2008

R/C COC FORM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

Client Name ROGERS + CALLCOTT

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS										
					CHRONIC TOXICITY										
AC 91042	11/17	1335	WWTP EFFLUENT DISCHARGE *	1	1										

Filtered (Yes/No)	N														
Cooled (Yes/No)	Y														
Container Type (P/G)	P														
Container Volume	½G														
Sample Type (Grab/Composite)	C														
Sample Source (WW, GW, DW, Other)	WW														
Sample Source Chlorinated (Yes/No)	N														
Lab Receipt Cl$_2$ Check															
Lab Receipt pH Check															
Preserved (Code)	A														

A–None D–NaOH G–Boric Acid
B–HNO_3 E–HCl H–Ascorbic Acid
C–H_2SO_4 F–$Na_2S_2O_3$ I– ____

COMMENTS:

SAMPLER

SAMPLER SET on @ 1335 ON 11/16/10 Time proportional By R+C

	Date/Time		Date/Time	
Relinquished by (Sig.) ①	11/17/10 1502	Received by (Sig.) ② Shipper Name & #	11/17/10 1502	**KNOWN HAZARDS ASSOCIATED WITH SAMPLES** * DELIVERED TO ETT LAB
Relinquished by (Sig.) ③		Received by (Sig.) ④ Shipper Name & #		
Relinquished by (Sig.) ⑤		Received by (Sig.) ⑥ Shipper Name & #		Temperature of blank or representative sample: At time of collection 3.0 °C; At time of lab receipt 2.1 °C

Seal # ____ at'chd by ○ Recvd. Intact by ○ Seal # ____ at'chd by ○ Recvd. Intact by ○

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CHAIN OF CUSTODY RECORD

Client Name ROGERS + CALLCOTT

Address _____

Report To: _____

Telephone No. _____ FAX No. _____

PO No. _____ Project No. _____

Rogers & Callcott Lab No.	Yr 10 Date	Time	Sample Description	Total Number of Containers	PARAMETERS: ORGANIC TOXICITY	
AC 91217	11/19	0850	WATER TREATMENT PLANT * EFFLUENT DISCHARGE	1	1	

Filtered (Yes/No): N
Cooled (Yes/No): Y
Container Type (P/G): P
Container Volume: 2L
Sample Type (Grab/Composite): C
Sample Source (WW, GW, DW, Other): NN
Sample Source Chlorinated (Yes/No): N
Lab Receipt Cl_2 Check:
Lab Receipt pH Check:
Preserved (Code): A

A–None D–NaOH G–Boric Acid
B–HNO_3 E–HCL H–Ascorbic Acid
C–H_2SO_4 F–$Na_2S_2O_3$ I– ____

COMMENTS:

Sample set on T@0850 on 11/18/10, Time proportional By RTC

SAMPLER Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
①	11/19/10 1348	② Shipper Name & #	11/19/10 1348
Relinquished by (Sig.) ③	Date/Time	Received by (Sig.) ④ Shipper Name & #	Date/Time
Relinquished by (Sig.) ⑤	Date/Time	Received by (Sig.) ⑥ Shipper Name & #	Date/Time

KNOWN HAZARDS ASSOCIATED WITH SAMPLES
* DELIVERED TO ETT LAB

Temperature of blank or representative sample
At time of collection 2.6 °C
At time of lab receipt 2.0 °C

Seal # at'chd by ○ Recvd. intact by ○ Seal # at'chd by ○ Recvd. intact by ○

December Monthly Construction Photo Log

Clare dredge finishes dredging the remainder of the island upstream of the WSI dam.

Clare dredge working along the river right bank upstream of the WSI dam.

Working to install two siphons onto the WSI dam, while Clare dredge moves toward the dam, removing sediment.

Clare dredge surrounded by ice on Twelvemile Creek.

Work at WSI preparing for dam demolition.

Two siphon pipes installed onto the WSI dam for the purpose of lowering the water level in the impoundment.